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10/623,042	07/18/2003	Ying Wang	UC0222 US NA	6443

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/623,042	Applicant(s) WANG, YING	
	Examiner Marie R. Yamnitzky	Art Unit 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. This Office action is in response to applicant's amendment filed November 14, 2005, which amends the specification, amends claim 17 and cancels claim 18. The examiner notes that the correct status identifier for claim 17 as set forth in the November 14th amendment is "(Currently Amended)".

Claim 17 is pending.

2. The objection to the disclosure for informalities, as set forth in the Office action mailed July 13, 2005, is overcome by applicant's amendment filed November 14, 2005.

The rejections of claim 18 as set forth in the July 13th Office action are rendered moot by claim cancellation.

The rejection of claim 17 as anticipated by Friend et al. (US 5,698,048), as set forth in the July 13th Office action, is overcome by the November 14th amendment.

3. Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Claim 17 has been amended to recite "the luminescence material has a Stern-Volmer luminescence quenching constant less than 100". The original disclosure does not provide support for this Stern-Volmer constant as related to the luminescence material. The original

disclosure describes Stern-Volmer constants as related to the charge transport and/or anti-quenching material. (For example, see page 6, line 20-p. 9, l. 7 of the specification.)

4. For purposes of the issues raised in the remainder of this Office action, claim 17 is interpreted as if the penultimate line recited --charge transport and/or anti-quenching material-- instead of "luminescence material".

5. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitations imposed by the requirement that at least one charge transport material or anti-quenching material be selected based on degree of luminescence quenching as determined by (a)-(d) are indefinite. There are numerous luminescent materials, and the claims are not limited to any specific luminescent materials. There are numerous charge transport and/or anti-quenching materials, and the claims are not limited to any specific charge transport and/or anti-quenching materials. The degree of luminescence quenching exhibited by a first combination of specific charge transport and/or anti-quenching material and specific luminescent material will not necessarily be the same as the degree of luminescence quenching exhibited by a second (different) combination of specific charge transport and/or anti-quenching material and specific luminescent material.

The limitations are also indefinite because the first part of step (d) is subjective. What is “appropriate” for an electronic device used for a specific first purpose, is not necessarily “appropriate” for an electronic device used for a specific second (different) purpose. Also, different people may have different standards as to what is considered “appropriate” for an electronic device used for a specific purpose. The claim limits the Stern-Volmer luminescence quenching constant, but it is not clear if any device comprising a charge transport and/or anti-quenching material having a quenching constant less than 100 is considered to meet the requirement for a degree of quenching that is appropriate for the desired electronic device, or if the requirement for a degree of quenching that is appropriate is in addition to the requirement for a material having a quenching constant less than 100.

The limitations imposed by the Stern-Volmer constant are also indefinite because the Stern-Volmer constant is not a constant with respect to a particular charge transport and/or anti-quenching material, per se. A particular charge transport and/or anti-quenching material may have a Stern-Volmer constant less than 100 with respect to one luminescent material while having a Stern-Volmer constant greater than 100 with respect to another luminescent material. The claimed device is not required to comprise the luminescent material that is utilized in determining the degree of luminescence quenching of the charge transport and/or anti-quenching material.

In line 15 of claim 17, the phrase “electronic device of said charge transport and/or anti-quenching material” is grammatically confusing.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Petrov et al. (WO 02/02714 A2).

Petrov et al. disclose organic light emitting electronic devices comprising an electroluminescent layer (photoactive layer), and a hole transport layer separate from the electroluminescent layer. The devices of the Comparative Sample and Samples 1-22 utilize MPMP for the hole transport layer. See pages 26-28 of the prior art.

Petrov et al. do not teach selecting at least one charge transport material based on degree of luminescence quenching as determined by present (a)-(d), but the method by which the charge transport and/or anti-quenching material is selected places no positive limitations on the material or the device. Since Petrov et al. teach that MPMP is suitable for use in an electronic device comprising a luminescent material, any degree of luminescence quenching exhibited by MPMP is apparently “appropriate” for Petrov’s device.

Further, MPMP has a Stern-Volmer luminescence quenching constant of 1.6 as determined with the luminescent material identified as “Emitter 1” in the present specification. Present claim 17 does not require the claimed device to comprise the luminescent material used to determine degree of luminescence quenching of the charge transport and/or anti-quenching

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material. Accordingly, the prior art devices meet the limitations of claim 17 since MPMP has a Stern-Volmer luminescence quenching constant less than 100 as determined with at least one luminescent material.

Even if claim 17 did require the device to comprise the luminescent material used to determine degree of quenching, Petrov et al. would anticipate the claimed device because the devices of Petrov's Samples 1, 2, 14 and 15 utilize MPMP as the hole transport material and Compound 1-b as the luminescent material. Compound 1-b is the same as Emitter 1 of the present application.

8. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Forrest et al. (US 6,310,360 B1).

Forrest et al. disclose an organic light emitting electronic device comprising at least one charge transporting and/or anti-quenching material. As taught, for example, at column 7, line 63-c. 8, l. 52, the device may comprise a blocking layer made of an electron-transporting material that does not quench triplets (a type of luminescence) and/or may comprise a blocking layer made of a hole-transporting material that does not quench triplets.

Forrest's device of Example 1 comprises a hole transport layer made of TPD, a luminescent (photoactive) layer comprising CBP, a blocking layer made of BCP and an electron transport layer made of Alq₃. Since BCP is used for the blocking layer, and Forrest et al. teach the use of a material that does not quench triplets for the blocking layer, it is the examiner's

position that it is reasonable to expect that BCP is capable of exhibiting a Stern-Volmer luminescence quenching constant less than 100.

9. Applicant's arguments filed November 14, 2005 have been fully considered but they are not persuasive.

With respect to the rejection under 35 U.S.C. 112, second paragraph, the examiner maintains the position that the requirement that a charge transport and/or anti-quenching material be selected based on (a)-(d) renders claim 17 indefinite. The device of claim 17 is not required to comprise the luminescent material utilized in (a)-(d). Since Stern-Volmer constant is not a constant with respect to a particular charge transport and/or anti-quenching material, per se, a single charge transport and/or anti-quenching material may exhibit a Stern-Volmer constant of less than 100 when tested according to (a)-(c) with a first luminescent material, while exhibiting a Stern-Volmer constant of 100 or greater when tested according to (a)-(c) with a second luminescent material that is different from the first luminescent material.

With respect to the prior art rejections, the present claims are product-by-process claims. Product-by-process claims are not limited to the method steps recited, only to the structure implied by the steps. The only positive limitation added by (a)-(d) of present claim 17 is that at least one charge transport and/or anti-quenching material in a layer that is separate from the photoactive layer of the claimed device must have a Stern-Volmer luminescence quenching constant less than 100 when tested with a luminescent material. No specific limitation is placed on the composition of the luminescent material, and the luminescent material used in the test is

not required to be a component of the claimed device. Accordingly, any organic light emitting electronic device having the structure recited in the second and third lines of claim 17, and comprising at least one charge transport and/or anti-quenching material that has a Stern-Volmer luminescence quenching constant less than 100 when tested with a luminescent material according to (a)-(c), meets the claim limitations even if the device was not made by a process in which (a)-(c) were carried out.

While Petrov et al. do not disclose carrying out (a)-(c), Petrov et al. disclose organic light emitting electronic devices having the structure recited in the second and third lines of claim 17, and comprising MPMP in the hole transport layer. MPMP has a Stern-Volmer luminescence quenching constant less than 100 when tested with the luminescent material identified as "Emitter 1" in the present specification and identified as Compound 1-b in Petrov's disclosure. Thus, Petrov's devices anticipate the presently claimed device.

Regarding Forrest et al., Forrest teaches the use of a material for the blocking layer that does not quench triplets of a material in the luminescent layer (triplets in the host material, if a host material is present, or triplets in the emitting molecule if no host material is present). The material in the luminescent layer that has triplets that are not quenched by the material for the blocking layer meets the limitations of a luminescent material that can be used for (a)-(d) of present claim 17. Based on Forrest's teaching of a lack of quenching of triplets, it is the examiner's position that it is reasonable to expect that BCP (the material of the blocking layer) is capable of exhibiting a quenching constant less than 100. (The rejection based on Forrest et al. has been corrected to reflect that the patent is available as prior art under 35 U.S.C. 102(b).)

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10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
January 12, 2006



**MARIE YAMNITZKY
PRIMARY EXAMINER**

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